Environmental Product Declaration

According to EN15804+A2 (+indicators A1)

This declaration is for:

1 ton of reinforcing steel (rebar) for use in reinforced concrete structures

Provided by:

BESIX Steel & Formwork

MRPI® registration:

1.1.00979.2025

Program operator:

Stichting MRPI®

Publisher:

Stichting MRPI®

www.mrpi.nl

Date of first issue:

5-12-2024

Date of this issue:

30-10-2025

Expiry date:

5-12-2029

COMPANY INFORMATION

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MRPI® REGISTRATION

1.1.00979.2025

DATE OF THIS ISSUE

30-10-2025

EXPIRY DATE

5-12-2029

SCOPE OF DECLARATION

This MRPI®-EPD certificate is verified by Ulbert Hofstra, SGS Intron B.V.. The LCA study has been done by René Kraaijenbrink, LBP|Sight. The certificate is based on an LCA-dossier according to EN15804+A2 (+indicators A1). It is verified according to the 'MRPI®-EPD verification protocol November 2020.v4.0'. EPDs of construction products may not be comparable if they do not comply with EN15804+A2. Declaration of SVHC that are listed on the 'Candidate list of Substances of Very High Concern for authorisation' when content exceeds the limits for registration with ECHA.

PROGRAM OPERATOR

Stichting MRPI®
Kingsfordweg 151
1043 GR
Amsterdam

PRODUCT

1 ton of reinforcing steel (rebar) for use in reinforced concrete structures (96,6% steel scrap and 3,4% primary steel)

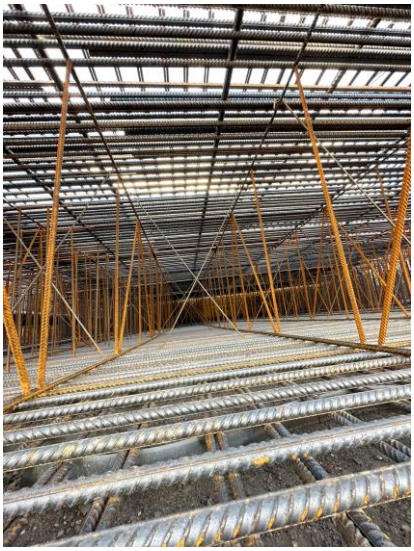
DECLARED UNIT / FUNCTIONAL UNIT

1000 Mass (kg)

DESCRIPTION OF PRODUCT

Reinforcing steel in various product forms, environmental profile calculated based on average annual production.

VISUAL PRODUCT



MORE INFORMATION

https://www.besix.com

Ing. L. L. Oosterveen MSc. MBA Managing Director MRPI	DEMONSTRATION OF VERIFICATION
	CEN standard EN15804 serves as the core PCR [1]
	Independent verification of the declaration an data according to EN15804+A2 (+indicators A1) Internal: External: X
	Third party verifier: Ulbert Hofstra, SGS Intron B.V.
	[1] PCR = Product Category Rules

DETAILED PRODUCT DESCRIPTION

Reinforcing steel/concrete steel

Reinforcing steel is used in the construction industry to strengthen concrete. Without reinforcing steel, concrete has poor resistance to the tensile forces commonly encountered in buildings and other structures. Given the many possible configurations of concrete, the reinforcing steel supplied by BESIX can be offered in various forms, including bars, mats/nets, cut and bent steel, and prefabricated reinforcing steel.
Reinforcing steel is processed at the BESIX factory and assembled on site or installed by subcontractors on site, after which the concrete is poured over it. However, it is also possible for the complete product (in a specific form) to be assembled in advance (prefabricated) at the manufacturer's production site.
The reinforcing steel is supplied in accordance with NEN 6008. BESIX is KOMO (K200238/04), BENOR and NF certified.
BESIX Steel & Formwork in Sint-Pieters-Leeuw (Belgium) is the division responsible for the production and delivery of cut and bent reinforcing steel, the delivery of steel mats/nets, and prefab reinforcing steel.

The average material composition of the reinforcing steel is as follows

Material	Quantity per 1 tonne reinforcing steel	Of which secondary material	Unit
Unalloyed steel, produced in the blast furnace route (BOF)	13	3	kg
Low-alloy steel, produced in the electric arc furnace (EAF)	863	863	kg
Reinforcing steel, produced in an unknown production route	124	101	kg
Total	1000	967	kg

SCOPE AND TYPE

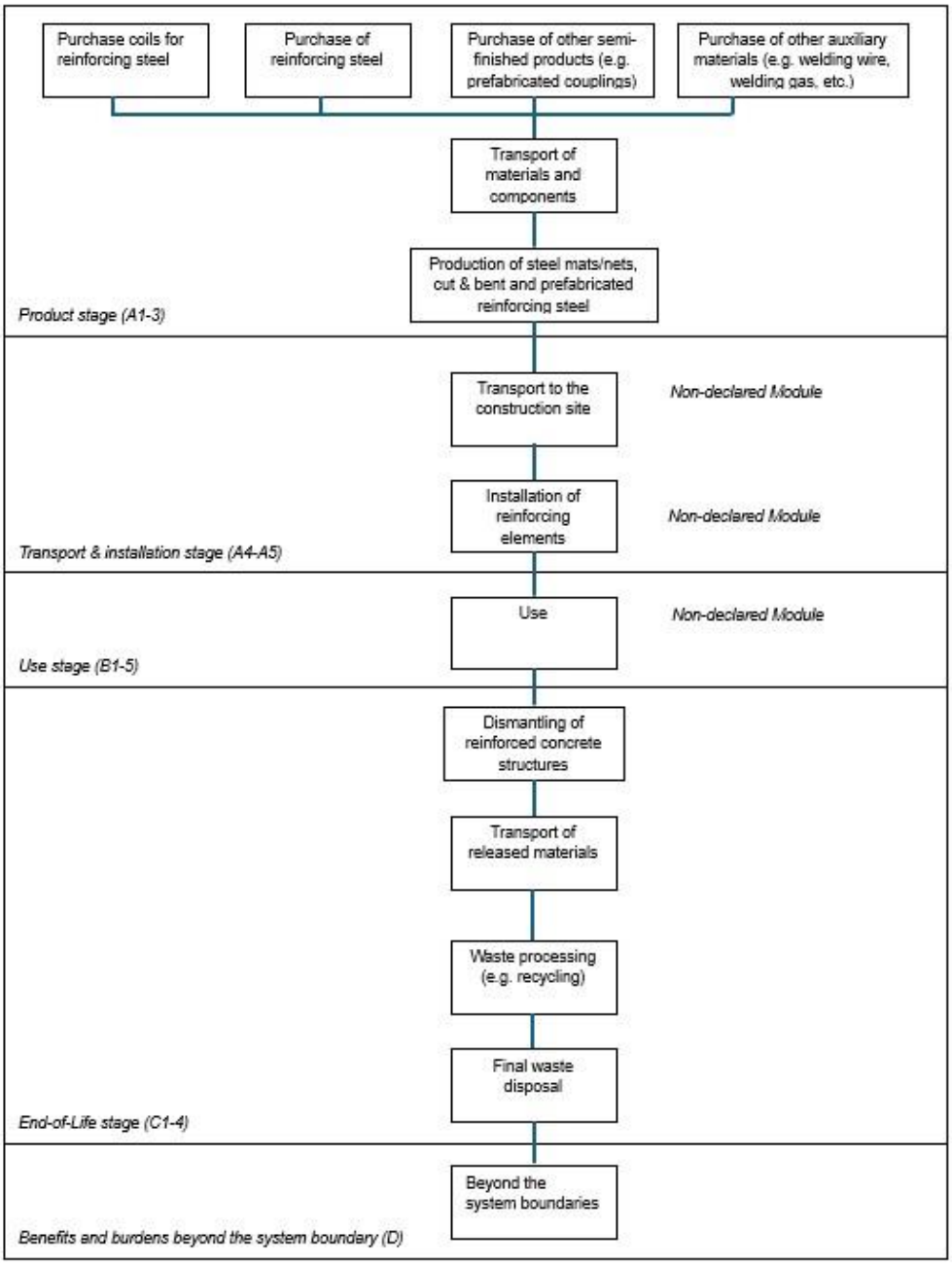
The analysis was conducted on the production of various types of reinforcing steel in Belgium for delivery to the Dutch market. For modelling the processes higher up in the chain, over which BESIX has no influence and for which no specific data from suppliers was available, the NMD process database, version 3.9 (2024; based on Ecoinvent 3.6) or the Ecoinvent 3.6 process database (2019) was used. Ecoinvent 3.6 therefore forms the basis for calculating the MKI of set 1. The LCA calculations were performed using SimaPro 9.6. This concerns an NMD category 1 (brand-specific) basic profile, scope cradle-to-gate (A1-A3) with optional modules C1-C4 and module D).

The reference service life (RSL) of the reinforcing steel is equal to the service life of the reinforced concrete product in which it is used.

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport gate to site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

X = Modules Assessed

ND = Not Declared



REPRESENTATIVENESS

To quantify the various input streams (materials and energy) and output streams (emissions and waste streams) for the production of reinforcing steel, practical data was collected from BESIX. The year 2023 was used as the reference year for data collection (annual totals).

BESIX's suppliers were asked to provide specific data. They were asked to specify the production route used to produce the purchased wire rod or bars (BOF route or EAF route), how much scrap was used in production and whether the steel was unalloyed or low-alloyed.
The spread due to the average composition of different variants of reinforcing steel and production locations falls well within the permitted spread limits as defined in the NMD Determination Method (<20%).

ENVIRONMENTAL IMPACT per functional unit or declared unit (indicators A1)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADPE	kg Sb eq.	0,00E+00	0,00E+00	0,00E+00	9,53E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,80E-04	1,37E-03	2,41E-06	1,54E-05
ADPF	MJ	0,00E+00	0,00E+00	0,00E+00	1,19E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E+02	3,34E+02	7,32E+00	2,73E+02
GWP	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	7,28E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,03E+00	2,44E+01	2,58E-01	2,13E+01
ODP	kg CFC11 eq.	0,00E+00	0,00E+00	0,00E+00	8,76E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,25E-06	3,05E-06	8,61E-08	7,41E-07
POCP	kg ethene eq.	0,00E+00	0,00E+00	0,00E+00	6,98E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,24E-03	2,15E-02	2,75E-04	4,62E-02
AP	kg SO2 eq.	0,00E+00	0,00E+00	0,00E+00	3,36E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,09E-02	2,40E-01	1,89E-03	7,19E-02
EP	kg (PO4) 3 eq.	0,00E+00	0,00E+00	0,00E+00	4,58E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,07E-03	3,06E-02	3,65E-04	8,54E-03

Toxicity indicators and ECI (Dutch market)

HTP	kg DCB eq.	0,00E+00	0,00E+00	0,00E+00	5,23E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,96E+00	2,96E+01	1,17E-01	1,33E+01
FAETP	kg DCB eq.	0,00E+00	0,00E+00	0,00E+00	2,30E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,64E-02	5,51E-01	2,77E-03	-1,65E-01
MAETP	kg DCB eq.	0,00E+00	0,00E+00	0,00E+00	4,08E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,11E+02	2,40E+03	9,91E+00	-1,38E+02
TETP	kg DCB eq.	0,00E+00	0,00E+00	0,00E+00	6,93E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,05E-02	9,21E-02	2,93E-04	-1,11E+00
ECI	euro	0,00E+00	0,00E+00	0,00E+00	112,25	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,47E-01	5,45E+00	3,65E-02	2,65E+00
ADPF	kg Sb eq.	0,00E+00	0,00E+00	0,00E+00	5,72E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,17E-02	1,60E-01	3,52E-03	1,31E-01

ADPE = Abiotic Depletion Potential for non-fossil resources
ADPF = Abiotic Depletion Potential for fossil resources
GWP = Global Warming Potential
ODP = Depletion potential of the stratospheric ozone layer
POCP = Formation potential of tropospheric ozone photochemical oxidants
AP = Acidification Potential of land and water
EP = Eutrophication Potential
HTP = Human Toxicity Potential
FAETP = Fresh water aquatic ecotoxicity potential
MAETP = Marine aquatic ecotoxicity potential
TETP = Terrestrial ecotoxicity potential
ECI = Environmental Cost Indicator
ADPF = Abiotic Depletion Potential for fossil resources

ENVIRONMENTAL IMPACT per functional unit or declared unit (core indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	6,39E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,02E+00	2,43E+01	2,58E-01	0,00E+00
GWP-fossil	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	6,38E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,02E+00	2,43E+01	2,58E-01	0,00E+00
GWP-biogenic	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	kg CO2 eq.	0,00E+00	0,00E+00	0,00E+00	1,13E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,58E-03	2,76E-02	7,31E-05	0,00E+00
ODP	kg CFC11 eq.	0,00E+00	0,00E+00	0,00E+00	5,35E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,56E-06	3,54E-06	1,08E-07	0,00E+00
AP	mol H+ eq.	0,00E+00	0,00E+00	0,00E+00	3,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,11E-02	2,99E-01	2,50E-03	0,00E+00
EP-fresh water	kg P eq.	0,00E+00	0,00E+00	0,00E+00	8,85E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,15E-05	1,68E-03	2,95E-06	0,00E+00
EP-marine	kg N eq.	0,00E+00	0,00E+00	0,00E+00	7,00E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,45E-02	6,60E-02	8,60E-04	0,00E+00
EP-terrestrial	mol N eq.	0,00E+00	0,00E+00	0,00E+00	8,04E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,60E-01	7,66E-01	9,48E-03	0,00E+00
POCP	kg NMVOC eq.	0,00E+00	0,00E+00	0,00E+00	2,24E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,88E-02	1,83E-01	2,33E-03	0,00E+00
ADP-minerals & metals	kg Sb eq.	0,00E+00	0,00E+00	0,00E+00	4,71E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,80E-04	1,37E-03	2,41E-06	0,00E+00
ADP-fossil	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	8,73E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E+02	3,42E+02	7,36E+00	0,00E+00
WDP	m3 world eq. Deprived	0,00E+00	0,00E+00	0,00E+00	2,53E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,74E-01	3,26E+00	3,30E-01	0,00E+00

GWP-total = Global Warming Potential total

GWP-fossil = Global Warming Potential fossil fuels

GWP-biogenic = Global Warming Potential biogenictotal

GWP-luluc = Global Warming Potential land use and land use change

ODP = Depletion potential of the stratospheric ozone layer

AP = Acidification Potential, Accumulated Exceedence

EP-freshwater = Eutrophication Potential, fraction of nutrients reaching freshwater end compartment

EP-marine = Eutrophication Potential, fraction of nutrients reaching marine end compartment

EP-terrestrial = Eutrophication Potential, Accumulated Exceedence

POCP = Formation potential of tropospheric ozone photochemical oxidants

ADP-minerals & metals = Abiotic Depletion Potential for non-fossil resources [1]

ADP-fossil = Abiotic Depletion for fossil resources potential [1]

WDP = Water (user) deprivation potential, deprivation-weighted water consumption [1]

Disclaimer [1]:

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ENVIRONMENTAL IMPACT per functional unit or declared unit (additional indicators A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease inci-dence	0,00E+00	0,00E+00	0,00E+00	5,63E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,80E-07	3,95E-06	4,98E-08	0,00E+00
IRP	kBq U235 eq.	0,00E+00	0,00E+00	0,00E+00	3,66E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,48E-01	1,70E+00	3,02E-02	0,00E+00
ETP-fw	CTUe	0,00E+00	0,00E+00	0,00E+00	3,89E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,28E+01	2,74E+02	1,74E+00	0,00E+00
HTP-c	CTUh	0,00E+00	0,00E+00	0,00E+00	2,00E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,91E-09	1,07E-08	5,92E-11	0,00E+00
HTP-nc	CTUh	0,00E+00	0,00E+00	0,00E+00	1,14E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E-08	9,04E-08	9,21E-11	0,00E+00
SQP	-	0,00E+00	0,00E+00	0,00E+00	2,97E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,61E+01	8,08E+02	1,61E+01	0,00E+00

PM = Potential incidence of disease due to PM emissions
IRP = Potential Human exposure efficiency relative to U235 [1]
ETP-fw = Potential Comparative Toxic Unit for ecosystems [2]
HTP-c = Potential Comparative Toxic Unit for humans, cancer [2]
HTP-nc = Potential Comparative Toxic Unit for humans, non-cancer [2]
SQP = Potential soil quality index [2]

Disclaimer [1]:

- This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste.

Disclaimer [2]:

- The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

OUTPUT FLOWS AND WASTE CATEGORIES per functional unit or declared unit (A1 en A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0,00E+00	0,00E+00	0,00E+00	2,10E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,71E-04	1,03E-03	1,10E-05	0,00E+00
NHWD	kg	0,00E+00	0,00E+00	0,00E+00	2,78E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,78E+00	1,00E+01	5,00E+01	0,00E+00
RWD	kg	0,00E+00	0,00E+00	0,00E+00	6,64E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,02E-04	2,03E-03	4,83E-05	0,00E+00
CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
ETE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD = Hazardous Waste Disposed
NHWD = Non Hazardous Waste Disposed
RWD = Radioactive Waste Disposed
CRU = Components for reuse
MFR = Materials for recycling
MER = Materials for energy recovery
EEE = Exported Electrical Energy
ETE = Exported Thermal Energy

RESOURCE USE per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	0,00E+00	0,00E+00	0,00E+00	1,14E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,34E+00	5,37E+01	5,95E-02	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	0,00E+00	0,00E+00	0,00E+00	1,14E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,34E+00	5,37E+01	5,95E-02	0,00E+00
PENRE	MJ	0,00E+00	0,00E+00	0,00E+00	1,30E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E+02	3,42E+02	7,36E+00	0,00E+00
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	0,00E+00	0,00E+00	0,00E+00	1,30E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E+02	3,42E+02	7,36E+00	0,00E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	9,66E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NSRF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	0,00E+00	0,00E+00	0,00E+00	1,58E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,30E-02	1,62E-01	7,86E-03	8,24E-02

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials
PERM = Use of renewable primary energy resources used as raw materials
PERT = Total use of renewable primary energy resources
PENRE = Use of non-renewable primary energy resources excluding non-renewable energy resources used as raw materials
PENRM = Use of non-renewable primary energy resources used as raw materials
PENRT = Total use of non-renewable primary energy resources
SM = Use of secondary materials
RSF = Use of renewable secondary fuels
NSRF = Use of non-renewable secondary fuels
FW = Use of net fresh water

BIOGENIC CARBON CONTENT per functional unit or declared unit (A1 and A2)

	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
BBCpr	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
BCCpa	kg C	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

BCCpr = Biogenic carbon content in product
BCCpa = Biogenic carbon content in packaging

CALCULATION RULES

This LCA was carried out in accordance with the requirements of EN15804+A2 and the NMD Determination Method. Within the system boundaries based on the applicable criteria, no input or output flows were excluded. 2023 was used as the reference year for data collection (annual totals). This analysis concerns a cradle-to-gate LCA with optional modules C1-C4 and module D. The reinforcing steel is produced with 96.7% steel scrap (= secondary steel). However, during the production of the semi-finished product, steel scrap is also released (2.4%), resulting in a net amount of secondary material of 96.6%. The data quality of specific and generic data has been assessed as sufficient using the data quality assessment system in the NMD assessment protocol.

SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

Production phase (A1-3)

The majority of the steel used in reinforcing steel is obtained from scrap. This is melted down (with the possible addition of “new” steel) and rolled. BESIX's suppliers use an average of 96.7% steel produced from scrap (secondary material) and 3.3% steel produced from primary extracted material for the rolling wire and bars used in production. The rolling wire is used for the production of reinforcing steel.

At BESIX, the purchased wire rod, bars and other semi-finished products are further processed into various semi-finished products:

- Mats/nets
- Cut and bent steel
- Prefab reinforcement steel (support beams)

At this stage, various processes can be applied, including welding, cutting, bending, profiling, drawing and straightening. At the end of this stage, there is either a finished product ready for installation or an intermediate product that is transported to the next processor.

During the various steps in the production process, steel scrap is generated (cutting/shearing waste and obsolete parts). This amounts to 2.4% of the production output. At steel production plants, this scrap can be directly reused in the own production process. In the other steps in the production process, this internal recycling is not possible. The scrap is then transported as a separate stream to a recycler. In accordance with the criteria set out in Regulation (EU) No. 333/2011, this is also the moment at which the steel scrap reaches end-of-waste status.

End-of-life phase (C1-C4)

The following principles have been applied with regard to quantifying the input and output flows of the end-of-life phase:

- The list of flat-rate values for processing-life associated with: Determination method Environmental performance Buildings prescribes the following scenario for reinforcing steel:
- 74) Steel, reinforcement for reinforced concrete structures, with
    - 5% landfill and
    - 95% recycling.

(C1) At the end of the technical life of the reinforced concrete structure in which the reinforcing steel has been used, it must be dismantled from the structure. Any energy consumption and environmental impact associated with this is entirely dependent on the type of structure. This module has therefore been declared as ‘0’ here.

(C2) In accordance with the end-of-life scenario applied, the flat-rate waste transport distances have been applied to an average of: 52.5 km.

(C3) The waste treatment phase includes all processes necessary for the reprocessing of the released materials until the moment at which end-of-waste is achieved. The moment of end-of-waste is achieved after the steel scrap has been sorted at a recycling company in accordance with the criteria set out in Regulation (EU) No 333/2011 . When processing reinforced concrete, it is assumed that the steel must be sorted and pressed after the concrete has been broken up.

(C4) The waste disposal phase includes the landfill of material flows that are not reused or recycled. These processes are modelled on a material-specific basis. This fraction is modelled in accordance with the end-of-life scenario applied.

Costs and benefits beyond the system boundaries (D)

At the end of the service life of the reinforced concrete structure in which the reinforcing steel has been used, steel scrap is released as a material for recycling. The following assumptions have been used to quantify the input and output flows of the end-of-life costs and benefits beyond the system boundaries:

- Steel scrap is easy to recycle with a high degree of value retention. This is already evident in practice from the high proportion of scrap used in the production of reinforcing steel.
- For the calculation of the module D benefits, the net outgoing flow of steel scrap as a secondary material is calculated.

This results in:

- MFR net out = MFR_out - SM_in = 95% - 96.6% = -1.3% = -0.016 tonnes/tonne

A charge is calculated in module D for this loss. However, it should be noted that from 1 January 2025, a negative netoutput of secondary materials will no longer be charged in module D. As this rule only affects Set 2 of the environmental impacts, the calculation results for Set 2 are corrected by setting this to “0”.

DECLARATION OF SVHC

This product does not contain any substances that appear on the SVHC candidate list.

REFERENCES

EN15804+A1
NEN-EN 15804:2012 + A1 (2013) "Sustainability of Construction works - Environmental product declarations - Core rules for the product category of construction products"

EN15804+A2
NEN-EN 15804:2012 + A2 (2019) "Sustainability of Construction works - Environmental product declarations - Core rules for the product category of construction products"

ISO14025
ISO14025:2010 "Environmental labels and declarations - Type III environmental declarations - Principles and procedures"

ISO14040
ISO14040:2006 "Environmental management — Life cycle assessment — Principles and framework"

ISO14044
ISO14044:2006 "Environmental management - Life Cycle Assessment - Requirements and guidelines"

NMD (Dutch National Environmental Database) Determination method
The Determination Method “Environmental Performance of Buildings” version 1.1 March 2022 including “amendment sheet amendment 4” dated June 2024

NEN6008
NEN 6008:2008+A1:2020 "Steel for the reinforcement of concrete"

End-of-waste criteria for iron, steel and aluminium scrap
Council Regulation (EU) No 333/2011 of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council

REMARKS

None